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| 10/544,246 | 08/02/2005 | Takeshi Kanazawa | 38484 | 2631 |

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| EXAMINER | |
|---|---|
| CEHIC, KENAN | |
| **ART UNIT** | **PAPER NUMBER** |
| 2616 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/544,246 | KANAZAWA, TAKESHI | |
| | Examiner | Art Unit | |
| | Kenan Cehic | 2616 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *02 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/ are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *08/02/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The listing of references in the Search Report is not considered to be an information disclosure statement (IDS) complying with 37 CFR 1.98. 37 CFR 1.98(a)(2) requires a legible copy of: (1) each foreign patent; (2) each publication or that portion which caused it to be listed; (3) for each cited pending U.S. application, the application specification including claims, and any drawing of the application, or that portion of the application which caused it to be listed including any claims directed to that portion, unless the cited pending U.S. application is stored in the Image File Wrapper (IFW) system; and (4) all other information, or that portion which caused it to be listed. In addition, each IDS must include a list of all patents, publications, applications, or other information submitted for consideration by the Office (see 37 CFR 1.98(a)(1) and (b)), and MPEP § 609.04(a), subsection I. states, "the list ... must be submitted on a separate paper." Therefore, the references cited in the Search Report have not been considered. Applicant is advised that the date of submission of any item of information or any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the IDS, including all "statement" requirements of 37 CFR 1.97(e). See MPEP § 609.05(a).

### *Specification*

2. The abstract of the disclosure is objected to because it contains 179 words. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

3. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

***Claim Objections***

4. Claim 2-7, 9-14 are objected to because of the following informalities:

For claim 2, the limitation "the minimum guaranteed band information" in line 4 is the first occurrence. It is suggested to change this to – a minimum guaranteed band information---. Similar problems exist in claim 9 line 3.

For claim 2, the limitation "the reference priority class" in line 6 is the first occurrence. It is suggested to change this to – a reference priority class ---. Similar problems exist in claim 9 line 6.

For claim 2, the limitation "the upper limit band information" in line 10 is the first occurrence. It is suggested to change this to – a upper limit band information ---. Similar problems exist in claim 9 line 11.

For claim 2, the limitation "the class lower" in line 12 is the first occurrence. It is suggested to change this to – a class lower ---. Similar problems exist in claim 9 line 13.

For claim 3, the limitation "the class still lower" in line 6 is the first occurrence. It is suggested to change this to – a class still lower ---.

For claim 5, the limitation "the firstly arrived packet" in line 3 is the first occurrence. It is suggested to change this to – a firstly arrived packet ---. Similar problems exist in claim 12 line 4.

For claim 6, the limitation "the high priority class" in line 8 is the first occurrence. It is suggested to change this to – a high priority class ---. Similar problems exist in claim 13 line 12.

Dependent claims are objected since they depend on objected claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ye (US 7,295,516) in view of Sharma et al (US 2003/0067876) and Coulombe et al (US 7,043,560).

For claim 1, Ye discloses a packet transfer (see col 5 lines 29-35 "controlling the forwarding of packet") control method (see Fig 5, 220) for controlling output order (see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be" and see col 12 lins 46-67 "dropping of packets, is applied to flow F2") when a plurality of packets (see Fig 5, 508, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be" and ) to be provided are selectively output (see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") to an output line (see fig 2, 208, "to/from routes and/or host devices") comprising the steps

of:

identifying a flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic"), to which a provided packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets");

reading out flow setting information (see fig 5, 216 and col 2 lines 46-53 "traffic

baseline") for the identified flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic") from previously set information (see col 2 lines 31-40 "traffic baselines...generated external... supplied to the dynamic buffer manager"); calculating an arrival rate (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "found...having a flow arrival rate (800bits/s)....Flow F2...having flow arrival rate (1200 bits/s)...") for the flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic" and col 12 lines 46-67 "F2"), to which the packet (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") belongs based on the arrival rate of the flow (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "found...having a flow arrival rate (800bits/s)....Flow F2...having flow arrival rate (1200 bits/s)..."); performing class setting (see col 12 lins 46-67 "dropping of packets, is applied to flow F2" and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") of the flow (col 12 lines 46-67 "F2") , to which the packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") in units of packet (see col 12 lins 46-67 "dropping of packets, is applied to flow F2") by comparing (see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") the arrival rate for the flow to the read flow setting information see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate

...for class 2 traffic"); and

controlling the output order (see col 12 lines 46 - col 13 lines 19 "no reduction is applied to...flow F1....dropping of packets, is applied to flow F2....packets of Flow F3 are dropped...." and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") of the plurality of packets (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets" and col 12 lines 46 - col 13 lines 19 "Flow F1.....F2...F3...F4....F5") based on the class of the class-set flow (see col 12 lins 46-67 "dropping of packets, is applied to flow F2" and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be"), to which the packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets").

Ye is silent about:

For claim 1, measuring an arrival rate of the packet;

calculating an arrival rate for the flow, to which the packet belongs based on the arrival rate of the packet;

Sharam from the same or similar field of endeavor discloses as communications method with the following features:

For claim 1, Sharam discloses calculating an arrival rate (see section 0035 lines 1-10 "data rate calculation....each flow i") for the flow (see section 0035 lines 1-10 "data rate calculation....each flow i"), to which the packet belongs (see section 0019 "IP data packets.are considered herein to be a data flow") based on the arrival rate of data (see

section 0035 lines 1-10 "recording the amount of traffic...data byets, Binary digits or bits...from each flow i that came in a during an interval") ;

Coulombe from the same or similar field of endeavor discloses a communication method with the following features:

For claim 1, Coulombe discloses measuring an arrival rate (see col 11 lines 8-15 "measuring a number of bits....over a duration of said at least one transaction unit...within the client...perceived bit rate is measured") of the packet (see col 11 lines 8-15 "measuring a number of bits....over a duration of said at least one transaction unit")

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Ye by using the features, as taught by Sharam and Coulombe, in order to provide a low-cost design and high-speed capable switching function (see Sharam section 0008-0013); in order to bit rate measurement considering idle period and to reallocate bandwidth from inactive to active applications (see Coulombe col 1 35- col2 5).

6. Claim 1-4, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ye (US 7,295,516) in view of Freed et al (US 7,088,678).

For claim 1, Ye discloses a packet transfer (see col 5 lines 29-35 "controlling the forwarding of packet") control method (see Fig 5, 220) for controlling output order (see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be" and see col 12 lins 46-67 "dropping of packets, is applied to flow F2") when a plurality of packets (see Fig 5,

508, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be" and ) to be provided are selectively output (see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") to an output line (see fig 2, 208, "to/from routes and/or host devices") comprising the steps

of:

identifying a flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic"), to which a provided packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets");

reading out flow setting information (see fig 5, 216 and col 2 lines 46-53 "traffic baseline") for the identified flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic") from previously set information (see col 2 lines 31-40 "traffic baselines...generated external... supplied to the dynamic buffer manager");

calculating an arrival rate (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "found...having a flow arrival rate (800bits/s)....Flow F2...having flow arrival rate (1200 bits/s)...") for the flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic" and col 12 lines 46-67 "F2"), to which the packet (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") belongs based on the arrival rate of the flow (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "found...having a flow arrival rate (800bits/s)....Flow F2...having flow arrival rate (1200 bits/s)...");

performing class setting (see col 12 lins 46-67 "dropping of packets, is applied to flow

F2" and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") of the flow (col 12 lines 46-67 "F2") , to which the packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") in units of packet (see col 12 lins 46-67 "dropping of packets, is applied to flow F2") by comparing (see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") the arrival rate for the flow (see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") to the read flow setting information see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic"); and

controlling the output order (see col 12 lines 46 - col 13 lines 19 "no reduction is applied to...flow F1....dropping of packets, is applied to flow F2....packets of Flow F3 are dropped...." and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") of the plurality of packets (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets" and col 12 lines 46 - col 13 lines 19 "Flow F1.....F2...F3...F4....F5") based on the class of the class-set flow (see col 12 lins 46-67 "dropping of packets, is applied to flow F2" and

see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be"), to which the packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets").

For claim 8, Ye disclose a packet transfer (see col 5 lines 29-35 "controlling the forwarding of packet") control circuit (see Fig 2, 200) for controlling output order (see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be" and see col 12 lins 46-67 "dropping of packets, is applied to flow F2") when a plurality of packets (see Fig 5, 508, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be" and ) to be provided are selectively output (see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") to an output line (see fig 2, 208, "to/from routes and/or host devices") comprising:

a flow identification means (see Fig 2, 200) identifying a flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic"), to which a provided packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets");

a flow setting information storage means (see Fig 2, 200) for storing information (see fig 5, 216 and col 2 lines 46-53 "traffic baseline") previously set (see col 2 lines 31-40 "traffic baselines...generated external... supplied to the dynamic buffer manager") for

each of a plurality of flows (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "F1...F2...F3....F4....F5");

a rate calculation means (see Fig 2, 200) for calculating an arrival rate (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "found...having a flow arrival rate (800bits/s)....Flow F2...having flow arrival rate (1200 bits/s)...") for the flow (see fig 5; 510 and col 5 lines 65 – col 6 lines 11 "traffic classifier...flows of traffic" and col 12 lines 46-67 "F2"), to which the packet (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") belongs based on the arrival rate of the flow (see fig 5, 516 and col 12 lines 46 - col 13 lines 19 "found...having a flow arrival rate (800bits/s)....Flow F2...having flow arrival rate (1200 bits/s)...") a class setting means (see Fig 2, 200) for performing class setting (see col 12 lins 46-67 "dropping of packets, is applied to flow F2" and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") of the flow (col 12 lines 46-67 "F2"), to which the packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") in units of packet (see col 12 lins 46-67 "dropping of packets, is applied to flow F2") by comparing (see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") the arrival rate for the flow (see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") to flow setting information (see col 2

lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") for the flow (col 12 lines 46-67 "F2") read out (see col 2 lines 51-62 "compared....determined to be aggressive...arrival rate that is higher that the baseline for flow of its type" and col 12 lines 45-67 "Flow F2...received flow rate...which is higher than the baseline flow rate ...for class 2 traffic") from the flow setting information storage means (see Fig 2, 200) after identification of the flow by the flow identification means; and an output control means (see Fig 2, 200) for controlling the output order (see col 12 lines 46 - col 13 lines 19 "no reduction is applied to...flow F1....dropping of packets, is applied to flow F2....packets of Flow F3 are dropped...." and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be") of the plurality of packets (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets" and col 12 lines 46 - col 13 lines 19 "Flow F1.....F2...F3...F4....F5") based on the class of the flow (see col 12 lins 46-67 "dropping of packets, is applied to flow F2" and see Fig 5, 529, 527 and col 11 15-26 "dropping the required number of received packets from the aggressive flows...higher the applied packet drop rate will be"), to which the packet belongs (see fig 5, 508 and col 5 lines 65 – col 6 lines 11 "packets") set by the class setting means (see Fig 2, 200).

Ye is silent about:

For claim 1, measuring an arrival rate of the packet;

calculating an arrival rate for the flow, to which the packet belongs based on the arrival rate of the packet;

For claim 2, wherein in the step of performing class setting, when the arrival rate for the flow, to which the packet belongs is less than or equal to a value of the minimum guaranteed band information in the flow setting information, the class of the flow, to which the packet belongs is set to the reference priority class in the flow setting information; and when the arrival rate for the flow, to which the packet belongs is larger than the value of the minimum guaranteed band information and is less than or equal to a value of the upper limit band information in the flow setting information, the class of the flow, to which the packet belongs is set to the class lower than the reference priority class in the flow setting information.

For claim 3, wherein in the step of performing class setting, when the arrival rate for the flow, to which the packet belongs is larger than the value of the upper limit band information in the flow setting information, the class of the flow, to which the packet belongs is set to the class still lower than the class set when the arrival rate for the flow, to which the packet belongs is larger than the value of the minimum guaranteed band information and is less than or equal to the value of the upper limit band information in the flow setting information.

For claim 4, performing disposition process of the packet, when the arrival rate for the flow, to which the packet belongs is compared to the value of the upper limit band information in the flow setting information, and then the arrival rate for the flow, to

which the packet belongs is larger than the value of the upper limit band information in the flow setting information.

For claim 7, reading out group setting information for a group, to which the identified flow belongs from previously set information; calculating an arrival rate for the group, to which the flow belongs based on the arrival rate of the packet; performing disposition process of the packet when the 5 arrival rate for the group is compared to a value of the upper limit band information in the group setting information, and the arrival rate for the group of the flow is larger than the value of the upper limit band information in the group setting information.

For claim 8, a rate measurement means for measuring arrival rate of the packet;

a rate calculation means for calculating an arrival rate for the flow, to which the packet belongs based on the arrival rate of the packet

For claim 9,wherein when the arrival rate for the flow, to which the packet belongs is less than or equal to a value of the minimum guaranteed band information in the flow setting information, the class setting means sets the class of the flow, to which the packet belongs to the reference priority class in the flow setting information; and when the arrival rate for the flow, to which the packet belongs is larger than the value of the minimum guaranteed band information in the flow setting information and is less than or equal to a value of the upper limit band information, the class setting means sets the class of the flow, to which the packet belongs to the class lower than the reference priority class in the flow setting information.

For claim 10, wherein when the arrival rate for the flow, to which the packet belongs is larger than the value of the upper limit band information in the flow setting information, the class setting means sets the class of the flow, to which the packet belongs to a class still lower than the class set when the arrival rate for the flow, to which the packet belongs is larger than the value of the minimum guaranteed band information and is less than or equal to the value of the upper limit band information in the flow setting information.

For claim 11, a packet disposition means for performing disposition process of the packet, when the arrival rate for the flow, ]5 to which the packet belongs is compared to the value of the upper limit band information in the flow setting information, and then the arrival rate for the flow, to which the packet belongs is larger than the value of the upper limit band information in the flow setting information.

Freed from the same or similar field of endeavor discloses a communications method with the following features:

For claim 1, measuring (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") an arrival rate of the packet (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control

parameter");

calculating an arrival rate (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") for the flow (see col 13 lines 60-67 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the packet belongs (see col 4 lines 1-5 "receiving at least one data packet") based on the arrival rate of the packet (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter");

For claim 2, Freed et al disclose wherein in the step of performing class setting (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control " fig 4a; 406-410), when the arrival rate (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control") for the flow (see col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream" and see col 13 lines 60-67 "data flow" ), to which the packet belongs (see col 10 lines 50-67 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is less than or equal (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control " ) to a value of the minimum guaranteed band information (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") in

the flow setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels"), the class of the flow (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control "), to which the packet belongs (see col 10 lines 50-67 "packet arrival rate") is set to the reference priority class (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") in the flow setting information (Fig 3, 300; threshold); and when the arrival rate (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") for the flow (see col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream" and see col 13 lines 60-67 "data flow" ), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is larger than the value of the minimum guaranteed band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") and is less than or equal to a value of the upper limit band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") in the flow setting information (Fig 3, 300; threshold), the class of the flow (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability"), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is set

to the class lower (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability" and see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") than the reference priority class (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") in the flow setting information (Fig 3, 300; threshold).

For claim 3, Freed discloses wherein in the step of performing class setting (see col 10 lines 50-col 11-15 "falls into a packet drop region 324 ...drops the packets"), when the arrival rate (see col 10 lines 50-col 11-15 "packet arrival rate is greater than the peak threshold level") for the flow (see col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream" and see col 13 lines 60-67 "data flow" ) , to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is larger than the value of the upper limit band information (see col 10 lines 50-col 11-15 "packet arrival rate is greater than the peak threshold level") in the flow setting information (Fig 3, 300; threshold), the class of the flow (see col 10 lines 50-col 11-15 "packet arrival rate is greater than the peak threshold level"), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is set to the class still lower (see col 10 lines 50-col 11-15 "falls into a packet drop region 324 ...drops the packets" and col 10 line 50 – col 11 line 15 "disable flow control region...no action is taken on the traffic shaper....falls into a packet drop region 324 ...drops the packets....drops packets with a probability") than the class set (see col

11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") when the arrival rate for the flow (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability"), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is larger than the value of the minimum guaranteed band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") and is less than or equal to the value of the upper limit band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") in the flow setting information (Fig 3, 300; threshold).

For claim 4, Freed discloses performing disposition process of the packet (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets"), when the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the flow (see col 13 lines 60-67 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the packet belongs (col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level

312....traffic shaper drops the packets" and col 4 lines 1-5 "receiving at least one data packet") is compared to the value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") in the flow setting information (Fig 3, 300; threshold), and then the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the flow (see col 13 lines 60-67-col 7 line 5 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the packet belongs (col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets" and col 4 lines 1-5 "receiving at least one data packet") is larger (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") than the value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") in the flow setting information (Fig 3, 300; threshold).

For claim 7, Freed discloses reading out group setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels") for a group (see col 6 56- col 7 line 5 "data flow from the subscriber"), to which the identified flow (see col 6 56- col 7 line 5 "data flow from the subscriber") belongs from previously set information (see Fig 4, 300 and col 6 lines 17-25 "memory...include ....thresholds"); calculating (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10

lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") an arrival rate (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter") for the group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the flow belongs group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream") based on the arrival rate of the packet (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter"); performing disposition process of the packet (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") when the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream") is compared to a value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") in the group setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels"), and the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the group (see col 13

lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream") of the flow is larger (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") than the value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") in the group setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels").

For claim 8, Freed discloses a rate measurement means (see Fig 1, 120 and Fig 2, 220) for measuring (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") an arrival rate of the packet (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter");

a rate calculation means (see Fig 1, 120 and Fig 2, 220) for calculating an arrival rate (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") for the flow (see col 13 lines 60-67 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the

packet belongs (see col 4 lines 1-5 "receiving at least one data packet") based on the arrival rate of the packet (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter").

For claim 9,wherein when the (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") for the flow (see col 13 lines 60-67 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), "), to which the packet belongs (see col 4 lines 1-5 "receiving at least one data packet") is less than or equal (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control " ) to a value of the minimum guaranteed band information (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") in the flow setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels"), the class setting means (see Fig 1, 120 and Fig 2, 220) sets the class of the flow(see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control "), to which the packet belongs (see col 10 lines 50-67 "packet arrival rate") to the reference priority class (see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") in the flow setting information (Fig 3, 300; threshold); and when the arrival rate (see col 11 lines 1-15 "packet arrival rate falls between the peak

threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") for the flow (see col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream" and see col 13 lines 60-67 "data flow" ), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is larger than the value of the minimum guaranteed band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") in the flow setting information (Fig 3, 300; threshold) and is less than or equal to a value of the upper limit band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability"), the class setting means (see Fig 1, 120 and Fig 2, 220) sets the class of the flow (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability" and see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control "), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") to the class lower (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability" and see col 10 lines 50-67 "packet arrival rate is below the committed threshold level...disable flow control ") than the reference priority class (see col 10 lines 50-67 "packet arrival rate is below the

committed threshold level...disable flow control ") in the flow setting information (Fig 3, 300; threshold).

For claim 10, wherein when the arrival rate arrival rate (see col 10 lines 50-col 11-15 "packet arrival rate is greater than the peak threshold level") for the flow (see col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream" and see col 13 lines 60-67 "data flow" ) , to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is larger than the value of the upper limit band information (see col 10 lines 50-col 11-15 "packet arrival rate is greater than the peak threshold level") in the flow setting information (Fig 3, 300; threshold), the class setting means (see Fig 1, 120 and Fig 2, 220) sets the class of the flow (see col 10 lines 50-col 11-15 "falls into a packet drop region 324 ...drops the packets" and col 10 line 50 – col 11 line 15 "disable flow control region...no action is taken on the traffic shaper....falls into a packet drop region 324 ...drops the packets....drops packets with a probability to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") to a class still lower lower (see col 10 lines 50-col 11-15 "falls into a packet drop region 324 ...drops the packets" and col 10 line 50 – col 11 line 15 "disable flow control region...no action is taken on the traffic shaper....falls into a packet drop region 324 ...drops the packets....drops packets with a probability") than the class set (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") when the arrival rate for the flow

(see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability"), to which the packet belongs (see col 11 lines 1-15 "packet arrival rate" and col 4 lines 1-5 "receiving at least one data packet") is larger than the value of the minimum guaranteed band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") and is less than or equal to the value of the upper limit band information (see col 11 lines 1-15 "packet arrival rate falls between the peak threshold level...and the control threshold level. ..falls into a packet drop with probability region...drops packets with a probability") in the flow setting information (Fig 3, 300; threshold).

For claim 11, a packet disposition means (see Fig 1, 120 and Fig 2, 220) for performing disposition process of the packet (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets"), when the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the flow (see col 13 lines 60-67 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the packet belongs (col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets" and col 4 lines 1-5 "receiving at least one data packet") is compared to the value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater

than the peak threshold level 312....traffic shaper drops the packets") in the flow setting information (Fig 3, 300; threshold), and then the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the flow (see col 13 lines 60-67-col 7 line 5 "data flow" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the packet belongs (col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets" and col 4 lines 1-5 "receiving at least one data packet") is larger (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") than the value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") in the flow setting information (Fig 3, 300; threshold).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Ye by using the features, as taught by Freed, in order to provide a traffic shaping method and flow control method without necessary dropping packets (see column 3).

7. Claim 5, 6, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ye (US 7,295,516) in view of Freed et al (US 7,088,678) as applied to claim 1/2, 8/9 above, and further in view of Monta et al. (US 7,046,677).

For claim 5, 6, 12, 13, Ye and Freed discloses the claimed invention as described in paragraph 6.

Ye and Freed are silent about:

For claim 5, performing order management so that the firstly arrived packet is output first in terms of a plurality of packets belonging to the same flow.

For claim 6, flow identification information for identifying the flow is stored in a FIFO queue set correspondingly to each class based on the class of the class-set flow, to which the packet belongs, and the flow to be output next is specified by reading out the flow identification information from the FIFO queue of the high priority class.

For claim 12, a packet order management means for performing order management so that the firstly arrived packet is output first in terms of a plurality of packets belonging to the same flow.

For claim 13, wherein the output control means comprises a plurality of FIFO queues set correspondingly to each class and a flow selection means for reading out the flow identification information from the FIFO queue of the high priority class in order to specify the flow to be output next, and wherein the flow identification information for identifying the flow is stored in one of the plurality of FIFO queues set correspondingly to each class based on the class of the class-set flow, to which the packet belongs, and the flow to be output next is specified by reading out the flow identification information stored in the FIFO queue of the high priority class by the flow selection means.

Monta from the same or similar field of endeavor discloses a communication network with the following features:

For claim 5, Monta discloses performing order management (see col 6 lines 55-col 7 line 2 "FIFO....next tag at the output of each FIFO") so that the firstly arrived packet (see col 6 lines 55-col 7 line 2 "FIFO....next tag at the output of each FIFO") is output first in terms of a plurality of packets (see col 6 lines 55-col 7 line 2 "FIFO....next tag at the output of each FIFO") belonging to the same flow(see col 6 lines 55-col 7 line 2 "FIFO...associated with the particular stream....next tag at the output of each FIFO").

For claim 6, Monta discloses flow identification information (see col 6 lines 55-65 "assigned packet priority and the address of the packet") for identifying the flow (see col 6 lines 55-65 "assigned packet priority and the address of the packet") is stored in a FIFO queue set (see Fig 3, Fifo1-N) correspondingly to each class (see col 6 lines 55-65 "assigned packet priority" and Fig 4 "packet classifier") based on the class (see col 6 lines 55-65 "assigned packet priority" and Fig 4 "packet classifier") of the class-set flow (see col 5 lines 40-50 "identifies the stream corresponding to each incoming packet ...assigns a priority" and Fig 4 "packet classifier"), to which the packet belongs (see col 5 lines 40-50 "identifies the stream corresponding to each incoming packet ...assigns a priority" and Fig 4 "packet classifier"), and the flow to be output next (see col 6 line 60-col 7 line 25 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority

Queue...by comparing the priority associated" and col 7 lines 50-55 "packet has been selected for transmission") is specified by reading out the flow identification information (see col 6 line 60- col 7 line 30 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated") from the FIFO queue of the high priority class (see col 6 line 60- col 7 line 55 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated....higher priority does not exist...entry is placed at the head of the Priority Queue").

For claim 12, Monta discloses a packet order management means (see fig 3, 302-308) for performing order management (see col 6 lines 55-col 7 line 2 "FIFO....next tag at the output of each FIFO") so that the firstly arrived packet (see col 6 lines 55-col 7 line 2 "FIFO....next tag at the output of each FIFO") is output first in terms of a plurality of packets (see col 6 lines 55-col 7 line 2 "FIFO....next tag at the output of each FIFO") belonging to the same flow(see col 6 lines 55-col 7 line 2 "FIFO...associated with the particular stream....next tag at the output of each FIFO").

For claim 13, Monta discloses wherein the output control means (see fig 3, 302-308) comprises a plurality of FIFO queue set (see Fig 3, Fifo1-N) correspondingly to each class (see col 6 lines 55-65 "assigned packet priority" and Fig 4 "packet classifier") and a flow selection means (see fig 3, 302-308) for reading out the flow identification

information (see col 6 line 60- col 7 line 25 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated" and col 7 lines 50-55 "packet has been selected for transmission") from the FIFO queue of the high priority class (see col 6 line 60- col 7 line 55 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated....higher priority does not exist...entry is placed at the head of the Priority Queue") in order to specify the flow to be output next next (see col 6 line 60- col 7 line 25 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated" and col 7 lines 50-55 "packet has been selected for transmission"), and wherein the flow identification information (see col 6 lines 55-65 "assigned packet priority and the address of the packet") for identifying the flow (see col 6 lines 55-65 "assigned packet priority and the address of the packet") is stored in a FIFO queue set (see Fig 3, Fifo1-N) correspondingly to each class (see col 6 lines 55-65 "assigned packet priority" and Fig 4 "packet classifier") based on the class (see col 6 lines 55-65 "assigned packet priority" and Fig 4 "packet classifier") of the class-set flow (see col 5 lines 40-50 "identifies the stream corresponding to each incoming packet ...assigns a priority" and Fig 4 "packet classifier"), to which the packet belongs (see col 5 lines 40-50 "identifies the stream corresponding to each incoming packet ...assigns a priority" and Fig 4 "packet classifier"), and the flow to be output next

(see col 6 line 60- col 7 line 25 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated" and col 7 lines 50-55 "packet has been selected for transmission") is specified by reading out the flow identification information (see col 6 line 60- col 7 line 30 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated") in the FIFO queue of the high priority class (see col 6 line 60- col 7 line 55 "sort the various streams according to the priorities specified by these next tags...priority queue...determine where this new entry should be inserted into the Priority Queue...by comparing the priority associated....higher priority does not exist...entry is placed at the head of the Priority Queue"). by the flow selection means (see fig 3, 302-308).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Ye and Freed by using the features, as taught by Monta, in order to provide more efficient distribution products capable of processing many streams simultaneously and at a reduced cost per stream and increased processing densities that occupy less space (see column 2)

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ye (US 7,295,516) in view of Freed et al (US 7,088,678) as applied to claim 8/9 above, and further in view of Patel et al. (US 6,865,185).

For claim 14 the claimed invention is described by Ye and Freed in paragraph 6.

For claim 14, Freed discloses a group rate calculation means (see Fig 1, 120 and Fig 2, 220) calculating (see col 12 lines 50-60 "arrival rate of packets measured" and col 8 lines 28-35 "monitor a packet arrival rate" and col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 8 lines 1-10 "calculates and monitors a packet arrival rate on the upstream connection") an arrival rate (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter") for the group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream"), to which the flow belongs group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream") based on the arrival rate of the packet (see col 10 lines 51-62 "compute a packet arrival rate using at least one incoming data packet" and col 5 lines 5-20 "at least one data packet...calculates at lest one flow control parameter") and;

a packet disposition means (see Fig 1, 120 and Fig 2, 220) for performing disposition process of the packet (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") when the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream") is compared to a value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak

threshold level 312....traffic shaper drops the packets") in the group setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels") read out from the group setting information storage means (see Fig 1, 120 and Fig 2, 220) after identification of the flow (see col 9 lines 10-20 "identifies communication entities" and col 13 lines 20-27 "may identify the CM" and col 8 lines 1-15 "monitors a packet arrival rate on the upstream connection") by the flow identification means (see Fig 1, 120 and Fig 2, 220), and the arrival rate (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") for the group (see col 13 lines 60-67-col 7 line 5 "data flow....subscriber" and col 6 line 60-col 7 line 5 "upstream flow...downstream and upstream") of the flow is larger (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") than the value of the upper limit band information (see col 10 line 51- col 11 line 15 "packet arrival rate is greater than the peak threshold level 312....traffic shaper drops the packets") in the group setting information (see Fig 3; 200 and col 10 lines 28-40 "threshold levels").

Ye and Freed are silent about:

As regarding claim 14, a group setting information storage means for storing information previously set for each of a plurality of groups, in which a plurality of flows are grouped;

Patel from the same or similar field of endeavor discloses a communication system with the following features:

As regarding claim 14, a group setting information storage means (see col 7 lines 35-45 "set of virtual groups....computer-readable medium") for storing information (see fig 2,

62 ; 36 ) previously set for each of a plurality of groups (see fig. 2, 36) , in which a plurality of flows are grouped (see col 2 lines 1-15 "IP and other data flows into virtual groups");

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the system of Ye and Freed by using the features, as taught by Patel, in order to provide a fair treatment of mobile flows across a wireless network (see column 3-4)

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

| | | | |
|---|---|---|---|
| US-5,282,203 A | 01-1994 | Oouchi, Toshiya | 370/232 |
| US-2002/0141339 A1 | 10-2002 | Konuma, Ryohei | 370/229 |
| US-2003/0172289 A1 | 09-2003 | Soppera, Andrea | 713/200 |
| US-2004/0049596 A1 | 03-2004 | Schuehler et al. | 709/238 |
| US-2004/0228302 A1 | 11-2004 | Seol, Jee Woong | 370/329 |
| US-6,947,750 B2 | 09-2005 | Kakani et al. | 455/452.2 |
| US-7,027,414 B2 | 04-2006 | Walsh et al. | 370/316 |
| US-2006/0126624 A1 | 06-2006 | Yazaki et al. | 370/389 |
| US-2006/0176968 A1 | 08-2006 | Keaney et al. | 375/260 |
| US-2006/0120300 A1 | 06-2006 | Gross, Gerhard W. | 370/252 |

The above are referenced to show system and methods of prioritizing traffic

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenan Cehic whose telephone number is (571) 270-3120. The examiner can normally be reached on Monday through Friday 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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